

REMARKS

Claims 31, 34-49, 52 and 54-64 are pending. Claims 49 and 61 have been amended. Claim 53 is canceled. Claims 63-65 are new.

Support for amended claims 49 and 61 can be found in original claim 1-5. Support for new claims 63-65 can be found, for example, in original claims 1-5 and in FIGS. 1 & 2 and corresponding sections of the detailed description. No new subject matter has been added.

As an initial matter, Applicant and the undersigned attorney thanks the Examiner and her Supervisor for their participation and cooperation during a telephone interview with the undersigned attorney on January 28, 2009.

The substance of the discussion that took place during the interview is substantially reflected herein. During this interview, the Examiner agreed to consider the arguments presented during the Interview when submitted in a written response.

Moreover, the Interview Summary, dated February 5, 2010, included an acknowledgement that the references currently of record fail to disclose the use of nickel in a particular manner. The Interview Summary states that another non-final Office action will be sent following this Office action response. Applicant submits that such a statement is premature. Indeed, there are many reasons outlined herein why the claimed subject matter is allowable. Applicant respectfully requests full consideration of the issues raised herein and requests allowance of the pending claims.

Claims 31, 34, 37-41 and 44-47, 49, 52-55 and 58-62 were rejected under 35 U.S.C. §103(a) as unpatentable over Fuerschbach (U.S. 4,815,534) in view of Usui (U.S. 4,223,826) and Mizuhara (U.S. 4,497,722).

Claim 31 recites a heat exchanger with plates substantially manufactured in stainless steel containing chromium. The heat exchanger has one or more port channels and connection surfaces for connecting the one or more port channels to a pipe member. The connection surfaces are formed by a nickel-based material.

The foregoing claim features can be appreciated by referring to the exemplary heat exchanger in FIGS. 1 and 2, which includes plates 1 substantially manufactured in stainless steel containing chromium. The heat exchanger has port channels 4 and connection surfaces 5 for connecting the one or more port channels to a pipe member 6.

In a typical implementation, the claimed subject matter helps a person be able to connect a pipe member (e.g., pipe member 6) to one or more of the port channels with a reduced risk of causing health problems or environmental damage. *See, e.g.*, page 2, lines 6-21 of the present application. As discussed below and as discussed during the above referenced interview, Applicant submits that the cited references, alone or in combination, do not disclose or render obvious the claimed subject matter.

The Fuerschbach patent discloses a plate heat exchanger in which stainless steel plates are brazed together in a stacked assembly. *See Abstract* and col. 6, lines 16-20. Threaded fittings IO, OC, IH and OH are brazed to the top plate.

The Usui patent discloses a method of brazing stainless steel to stainless steel or another metal. Col. 1, lines 6-7. The method includes plating the surfaces to be joined with copper (Cu) and then brazing the Cu-plating together using a copper base-tin alloy brazing material. *See col. 2, lines 30-36 and 49-53 and Abstract.*

The Mizuhara patent discloses a brazing alloy that includes nickel.

In view of the foregoing disclosures, the Office action alleges that the claimed subject matter would have been obvious. As discussed below, Applicant respectfully disagrees.

First, neither Fuerschbach, nor any of the other cited references, suggest that a problem existed with connecting pipe members to the Fuerschbach's plate type heat exchanger. Indeed, the Fuerschbach patent itself states that “[f]or fabrication of the heat exchanger no special or costly practice is involved” and that the “[t]hreaded nipples . . . are brazed to the top plate.” Col 6, lines 17-19; and col. 5, line 66- col. 6, line 1.

Applicant submits, therefore, that a person of ordinary skill would have had no reason to even turn to the other references for a solution to a problem that was not even hinted to in the Fuerschbach patent.

Claims 31 should be allowable for at least the foregoing reasons.

Additionally, even if a person of ordinary skill had a reason to somehow combine the cited references, the claimed subject matter would not have been produced.

As discussed during the above-referenced Interview, the Mizuhara patent, which is the only reference used to reject these claims that mentions nickel, discloses a nickel-containing brazing alloy - not a "connection surface for connection of the one or more port channels to a pipe member," as recited in claim 31.

Applicant submits that, in view of the cited references, a person of ordinary skill would have had no reason to use a brazing material, such as the brazing material disclosed in Usui, as a connection surface for a stainless steel/chromium plate in a plate-type heat exchanger. In this regard, the Office action (at page 4) states that "the substitution of the brazing alloy of Mizuhara would have been obvious . . . as the brazing alloy is structurally equivalent to that of Usui, and a simple substitution does not render a structure patentab[ly] distinct over an existing structure."

Page 4. As discussed below, the references of record do not support the claim that the Mizuhara's brazing material is "structurally equivalent" to or a "simple substitution" for the copper plating disclosed in the Usui patent.

First, Mizuhara's brazing material is not "structurally equivalent" to Usui's copper plating at least because Mizuhara's brazing material includes nickel whereas Usui's copper plating does not include nickel. Other structural differences should be apparent from the differences in the various elements in each material. The cited references certainly do not suggest why these different materials would be considered "structurally equivalent."

Second, Mizuhara's brazing material is not a "simple substitution" for Usui's copper plating at least because Mizuhara's brazing material is for brazing whereas Usui's copper plating is for plating. The cited references do not disclose and the Office action does not explain how the use of different materials from different applications could be considered a "simple substitution." It is not.

Claim 31 should be allowable for the foregoing reasons additional reasons as well.

Moreover, Applicant submits that the rejections of these claims are based on hindsight reasoning, which is improper.

To determine what would have been obvious, one must “first picture the inventor . . . working in his shop with the prior art references--which he is presumed to know--hanging on the walls around him.” *In re Winslow*, 365 F.2d 1017, 1020 (CCPA 1966). Given the prior art, then “[i]t is difficult but necessary that the decision maker forget what he or she has been taught . . . about the claimed invention and cast the mind back to the time the invention was made . . . , to occupy the mind of one skilled in the art who is presented only with the references, and who is normally guided by the then-accepted wisdom in the art.” *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1552-53 (Fed. Cir. 1983). This mindset is required to avoid “fall[ing] victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.” *Id.*

In the present situation, the cited references fail to show how the wisdom in the art at the time the invention was made would have led a person of ordinary skill to the claimed subject matter without knowledge of the claimed invention.

Claim 31 should be allowable for the foregoing reasons additional reasons as well.

Claims 32-34, 37-41 and 44-47 depend from claim 31 and, therefore, should be allowable for at least the same reasons as claim 31.

Independent claims 49 and 61 recite subject matter that is similar to the subject matter of claim 31.

Claim 49, for example, recites a method for manufacturing a plate heat exchanger including heat exchanger plates that are substantially manufactured in stainless steel containing chromium and have a connection surface surrounding at least one of its port channels. The method includes applying a nickel-based material to form the connection surface and to permit brazing of a pipe member to the connection surface in a more easy manner than brazing to

stainless steel, where the nickel-based material is more reduction susceptible than chromium dioxide.

As discussed above, the Fuerschbach, Usui and Mizuhara patents, alone or in any reasonable combination, do not disclose or render obvious the claimed subject matter.

Claims 49 and 61 should be allowable for at least the foregoing reasons.

Claims 52-55, 58-60 and 62 depend from either claim 49 or 61 and should be allowable for at least the same reasons as the claims from which they depend.

Claims 35 and 36 were rejected under 35 U.S.C. §103(a) as unpatentable over Fuerschbach, in view of Usui and Mizuhara and further in view of Wells (U.S. 3,675,311).

Claims 35 and 36 depend from claim 31, which recites a heat exchanger with plates substantially manufactured in stainless steel containing chromium. The heat exchanger has one or more port channels and connection surfaces for connecting the one or more port channels to a pipe member. The connection surfaces are formed by a nickel-based material.

As discussed above with reference to claim 31, the Fuerschbach, Usui and Mizuhara patents, alone or in any reasonable combination, do not disclose or render obvious the claimed subject matter. Nor does the Wells patent, alone or in any reasonable combination with the other references, disclose or render obvious the claimed subject matter.

The Wells patent merely discloses thin-film diffusion brazing of nickel and nickel base alloys. The techniques disclosed include producing a coated material (coated with either titanium or niobium and either silver or gold material) and placing the coated material between adjacent surfaces to be bonded. The pieces are held together at a temperature in excess of 950°C for a time period sufficient to achieve a solid state diffusion of the material into the nickel or nickel base alloy, and diffusion of the nickel or nickel base alloy into the joint area.

The Wells patent does not relate to plate-type heat exchangers with plates that are substantially manufactured in stainless steel and containing chromium, as recited in claim 31. Indeed, the Wells patent does not even mention stainless steel or chromium. Nor does the Wells

patent disclose one or more port channels surrounded by connection surfaces that include a nickel-based material that permits brazing of a pipe member to the connection surface in a more easy manner than to stainless steel and is more reduction susceptible than chromium dioxide, as recited in claim 31. Nor does the Office action make any contrary assertions.

Claims 35 and 36 should be allowable for at least the foregoing reasons.

Moreover, claim 35, for example, recites that the nickel-based material is bound to a stainless steel connection surface (for connection to a pipe member) through diffusion.

Although the Wells patent discloses a brazing technique that results in diffusion of brazing materials, neither Wells nor the other cited references provide a reason why a person of ordinary skill would have been led to binding material to a connection surface (for connection to a pipe member), as recited in claim 35.

Claim 35 should be allowable for at least the foregoing additional reasons.

Claim 56 also was rejected as being obvious over Fuerschbach in view of Usui and Mizuhara and further in view of Wells.

Claim 56 depends from claim 49, which recites subject matter similar to the subject matter of claim 31. As discussed above with reference to claim 31, the Fuerschbach, Usui and Mizuhara patents, alone or in any reasonable combination, do not disclose or renders obvious the claimed subject matter. Nor, for the reasons discussed above with reference to claims 35 and 36, does the Wells patent, alone or in any reasonable combination with the other references, disclose or render obvious the claimed subject matter.

Moreover, the fact that four references were pieced together to make this rejection at least suggests that the claimed subject matter is not very obvious.

Claim 56 should be allowable for at least the foregoing reasons.

Claims 42 and 43 were rejected as being obvious over Fuerschbach in view of Usui and Mizuhara and further in view of the article in the Encyclopedia Britannica.

Claims 42 and 43 depend from claim 31. As discussed above, Fuerschbach, Usui and Mizuhara, alone or in combination, do not disclose or render obvious the claimed subject matter. Nor does the article from the Encyclopedia Britannica disclose or render obvious the claimed subject matter.

The article from Encyclopedia Britannica discloses, in relevant part, preparing brazing surfaces by mechanical or chemical polishing. The article does not disclose or renders obvious the subject matter of claim 31 that is missing from the other cited references. Nor does the Office action assert otherwise.

Moreover, the fact that four references were pieced together to make this rejection at least suggests that the claimed subject matter is not very obvious.

Claims 42 and 43 should be allowable for at least the foregoing reasons.

Claim 48 was rejected as being obvious over Fuerschbach, in view of Usui and Mizuhara and further in view of Blomgren (US 6,016,865).

Claim 48 depends from claim 31. As discussed above with reference to claim 31, neither Fuerschbach, Usui, nor Mizuhara, alone or in any reasonable combination, discloses or renders obvious the claimed subject matter. Nor does the Blomgren patent disclose or render obvious the claimed subject matter.

The Blomgren patent discloses a plate type heat exchanger in which a washer 15 is brazed as part of plate heat exchanger assembly. *See* col. 4, lines 4-10. The Blomgren patent, however, does not disclose a plate heat exchanger with plates substantially manufactured in stainless steel and containing chromium, where the heat exchanger has one or more port channels surrounded by connection surfaces that include a material that permits brazing of a pipe member to the connection surface in a more easy manner than to stainless steel and is more reduction susceptible than chromium dioxide and where the material includes nickel. Nor does the Office action assert otherwise.

Moreover, the fact that four references were pieced together to make this rejection at least suggests that the claimed subject matter is not very obvious.

Claim 48 should be allowable for at least the foregoing reasons.

Claim 57 was rejected as being obvious over Fuerschbach in view of Usui in view of Mizuhara in view of Wells and further in view of an article from Encyclopedia Britannica.

Claim 57 depends from claim 49. As discussed above, neither Fuerschbach, Usui, Mizuhara, Wells, nor any combination thereof, discloses or renders obvious the subject matter of claim 49. Nor does the article from Encyclopedia Britannica, alone or in combination with the other cited references, disclose or render obvious the claimed subject matter.

As discussed above, the article from Encyclopedia Britannica discloses, in relevant part, preparing brazing surfaces by mechanical or chemical polishing. The article does not disclose or render obvious the subject matter of claim 49 that is missing from the other cited references. Nor does the Office action assert otherwise.

Moreover, the fact that five references were pieced together to make this rejection at least suggests that the claimed subject matter is not very obvious.

Claim 57 should be allowable for at least the foregoing reasons.

New independent claim 63 recites subject matter that is similar to the subject matter in claim 31.

Claim 63, therefore, should be allowable for at least the same reasons as claim 31.

Moreover, new independent claim 63 recites that the nickel material is bound to a stainless steel connection surface (that is for connection to a pipe member) through diffusion. This claim feature is similar to the claim feature recited in claim 35, which, in the Office action, was rejected under 35 U.S.C. §103 as unpatentable over Fuerschbach, Usui and Mizuhara, and the Wells patent (U.S. Patent No. 3,675,311). As discussed above, with reference to claim 35, the cited references references, alone or in combination, do not disclose or render obvious the claimed subject matter.

Claim 63 should be allowable for the foregoing additional reasons as well.

New independent claim 64 recites subject matter that is similar to the subject matter of claim 31. More particularly, claim 64 recites a plate heat exchanger with heat exchanger plates having one or more connection surfaces for connecting one or more of the port channels to a pipe member, wherein the connection surfaces comprise a nickel-based material. As discussed above with reference to claim 31, the cited references, alone or in combination, do not disclose or render obvious the claimed subject matter.

Claim 64 should be allowable for at least the foregoing reasons.

Claim 65 depends from claim 64 and, therefore, should be allowable for at least the same reasons as claim 65.

Moreover, claim 65 recites that the nickel-based material is diffused into the stainless steel. As discussed above, the cited references, alone or in combination, do not disclose or render obvious the claimed subject matter.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

A Petition for a One-Month Extension of Time is enclosed. The required petition fee in the amount of \$130 and the excess claims fee in the amount of \$492 are being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization.

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Please apply any additional charges or credits to Deposit Account No. 06-1050,  
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Respectfully submitted,

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